

bottom of the tin box will do no harm. The metal cover of course should be immediately put in place after the alcohol is added in order to prevent loss from evaporation. Just as in a press, a collecting box of this type will hold as many specimens in their papers as can be squeezed tightly into it. When full the cover is sealed with the tape and then waxed, but before this is done one should be certain that all papers are reasonably moist with alcohol. Experience has shown that plants, if untampered with, are good for several months of perfect preservation in such a box once it has been sealed.

Boxes containing specimens temporarily preserved in this manner in a saturated atmosphere of alcohol, are light in weight and lend themselves to all methods of transport including shipment by air. Thus upon our arrival in a populated district after a long trip, it was our custom to air-express the containers to the museum of the University of San Marcos in Lima where aides would open the boxes, remove the plants, and prepare them for the herbarium, handling them during the drying process exactly as though they were fresh material. The empty boxes could be returned by air to the field party. Herbarium specimens made in this way appear to be just as satisfactory as specimens prepared by normal procedures, and in fact they are less brittle than those obtained from fresh material and dried immediately by artificial heat. Of course, and as with formaldehyde, all natural colors are lost, the specimens appearing brownish. For this reason it is imperative that the botanist record all such data at the time of collection in the field.

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## TWO EASTERN AMERICAN SPECIES OF IRIS

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IRIS HOOKERI Penny, forma **pallidiflora** (Fern.), comb. nov. *I. setosa* Pallas, var. *canadensis* M. Foster, f. *pallidiflora* Fern. in RHODORA, xxviii. 168 (1926).

I. HOOKERI, forma **zonalis** (Eames), comb. nov. *I. setosa*, var. *canadensis*, f. *zonalis* Eames in RHODORA, xi. 91 (1909).

The blue-flowered *Iris Hookeri*, so distinct in its dense habit, with strongly multicapital base with erect crowns, low stature,



petals reduced to awn-tipped rudiments only 1 or 2 cm. long, and papery beakless capsules, carpets the crests of sea-cliffs or bluffs, the turf back of or upper borders of sea-beaches and other dry or dryish maritime habitats from latitude 58° on the outer coast of Labrador south in an extremely narrow but interrupted belt, rarely 100 feet wide, on the coast to latitude 44°, midway on the coast of Maine, with an intrusion up the lower St. Lawrence to Charlevoix and Montmagny Counties, Quebec. In recent years it has been treated as an eastern variety of the Beringian *I. setosa* Pallas: *I. setosa*, var. *canadensis* M. Foster in RHODORA, v. 158 (1903). Prior to Sir Michael Foster's announcement that it is only a relatively low and isolated eastern variety of the taller species of northeastern Asia and Alaska, the eastern plant had regularly passed as *I. Hookeri* Penny (1832). After a period of more than 40 years, in which Sir Michael's interpretation has been generally accepted, I find myself unable to maintain *I. Hookeri* as merely a variety of *I. setosa*.

The latter is a relatively tall plant, with loosely branching crown, the many specimens before me showing the horizontal to oblique rhizomatous branches of the loose crown 4–10 cm. long and bearing fibrous remnants of decayed leaves; *I. Hookeri* being very densely cespitose, the closely crowded erect or ascending crowns retaining intact many marcescent and undecayed old leaves. *I. setosa* has thinnish arching basal leaves; those of *I. Hookeri* are firm or stiff and strongly ascending or erect. *I. setosa* has well developed thinnish cauline leaves, the upper one or that below the lowest fork in forking stems mostly 1–3 dm. long; whereas the flowering stem of *I. Hookeri* is leafless above the base or it may have 1 (on branching stems 2), very firm and stiff upper cauline navicular blade 4– rarely 15 cm. long, borne definitely above the longer basal blades. Of the 270 flowering or fruiting stems before me 42 are quite naked between the tuft of basal leaves and the spathe. In *I. setosa* the outer spathe-bract is blunt to merely acute and usually scarious-margined; in *I. Hookeri* attenuate to a sharp tip and more generally herbaceous. In *I. setosa* the crest of the style-branch is fringed with acicular processes; in *I. Hookeri* the 2-lobed crest has broader and blunter teeth.

*I. setosa* is a paludal species; *I. Hookeri* non-paludal, most often



a *chasmophyte*, and regularly avoiding the swampy, boggy or marshy areas. This difference in habitat is clearly brought out by such labels as record such usually neglected items and by many reports of field-observers. Thus for *I. setosa* we get the following statements: "bogs", *Van Dyke*, no. 260; "streams", *Harrington*; "wet meadow", *J. P. Anderson*, no. 6624; "meadow", *Nelson & Nelson*, no. 4360; "swamps", *Mrs. Henry B. Looff*, no. 118; "In paludibus", *Kudo*, Fl. Isl. Paramushir, 94 (1922); "In peninsula nostra tota in pratis ripariis vel silvaticis, in pascuis, ad ripas aquarum et in paludibus sphagnosis gregaria saepe occurrit", *Komarov*, Fl. Penins. Kamtsch. 308 (1927); "In South Kamtchatka *I. setosa* is a common plant occurring in nearly all lowland associations belonging to the meadow series . . . In the drier formations it is very often sterile", *Hultén*, Fl. Kamtch. i, 256 (1927); "In meadows and boggy places", *Tatewaki & Kobayashi*, Contrib. Fl. Aleut. Isl. 117. (1934); "spreading over acres of marshland", *Sharples*, Alask. Wild Fl. 69 (1938); "Common in marshy places of the interior; on the Bering Sea coast often in wet, brackish meadows", *A. E. Porsild* in RHODORA, xli. 214 (1939).

As already implied, *Iris Hookeri* finds it very unhealthy, apparently fatal, to have its feet wet. During an intimate field-acquaintance with it, through long periods of summer from 1902 to 1929 my companions and I never saw it in a positively marshy, swampy, or boggy spot nor often in brackish or saline marsh. From the 85 labels before me which clearly indicate the habitat the following summary is derived: rocky or gravelly sea-shore, 16; dry to moist turf or gravel back of beach, 13; dry to moist sands or dunes, 13; humus or meadow back of crest of sea-cliff, 11; dryish upper border of sea-beach, 11; sea-cliffs or headlands, 6; peaty or rocky barrens, 3; dry sandy bluffs or hillsides, 3; talus along coast, 1; springy bank, 1; rocky pasture, 1; salt-marsh, 3; moist place bordering sea, 1; sandy shore back of salt marsh, 1; turfy margin of brackish pond, 1. Of these, it will be noted, only the last 6 are from possibly brackish spots; and when, rarely, *I. Hookeri* approaches the wetter areas it is inclined to cross with *I. versicolor*.

The nomenclature of *Iris Hookeri* Penny ex G. Don in Loudon, Hort. Brit. Suppl. 1: 591 (1832) needs clarification. The first



recognition of it seems to have been as *I. tripetala* sensu Hook. in Bot. Mag. lvi. t. 2886 (1829), where were published a colored plate and a detailed description of a plant cultivated in England and wrongly identified with the Carolinian *I. tripetala* Walt. or *I. tridentata* Pursh. The plate and description are of the maritime plant from farther northeast, though with exaggeratedly long spathes, these, however, being fairly well matched in unusually well developed plants from Newfoundland, such as Fernald, Long & Dunbar, no. 26,524 from turfy shore along the Straits of Belle Isle. In his Fl. Bor.-Am. ii. 206 (1839) Hooker placed the plant, without description, under *I. tridentata* Pursh. The name *I. Hookeri* was based exclusively on Hooker's plate 2886. Under that name the northeastern plant remained until the publication of *I. setosa*, var. *canadensis* M. Foster in RHODORA, v. 158 (1903). Apparently the first departure from these two validly and legitimately published names was that of Wherry. In his highly untechnical account of the showier vascular plants of one much visited area, his Wild Flowers of Mount Desert Island, Maine, 37, fig. 24, and 120 (1928) "the arctic<sup>1</sup> Beachflag Iris" is illustrated as *Iris canadensis*, and (p. 120) is enumerated as "*I. canadensis* or *I. setosa*", without any reference to *I. setosa*, var. *canadensis* M. Foster (1903). Just why, when treated as a species, *I. Hookeri* Penny (1832), has to get a new but undefined name, which is said to be equivalent with *I. setosa* (1820), is not made clear, and at best *I. canadensis* Wherry, is a mere *nomen*. However, in the American Iris Society's Alphabetical Iris Check List, edited by Mrs. Wheeler H. Peckham (1929), one finds on p. 71, in the alphabetical series, chiefly of horticultural names, the following sequence: "Camille Thienpont", "CAMMA", "CAMPANEL", "**canadensis**. Trip-B 3 M (Small); *Hookeri*, Penny; *setosa* var. *Canadensis*, Fos.; *tridentata*." Then on p. 132 he finds *I. Hookeri* Penny (1832) reduced outright to the synonymy of the maintained "**I. canadensis**". Dr. R. C. Foster, in his study of North American Iris in Contrib. Gray Herb. no. cxix. 60 (1937), interpreted the new binomial as *I. "canadensis* (M. Foster) Small ex Peckham" and Wherry's *I. canadensis* as based on *I. setosa*, var. *canadensis* M. Foster, although Wherry did not

<sup>1</sup> The Arctic is generally interpreted as including primarily the regions north of the Arctic Circle. The northernmost record which I can find for *Iris Hookeri* is near lat. 58° (well south of the Arctic Circle) on the coast of Labrador.



mention the latter. The Gray Herbarium Card Index has ignored the latter as a mere nomen with no basonym actually cited. At any rate, it is quite unjustifiable to displace the properly founded *I. Hookeri* Penny (1832) by another binomial set up in pretty vague fashion in 1929. Furthermore, the propriety of publishing at this period of plant-nomenclature new *botanical* combinations in a work which is so patently a list of strictly horticultural trivial and not true botanical names may appropriately be questioned, especially when the authors obviously did not understand just what they were doing.

IRIS VERNA L., var. **Smalliana**, var. nov. *I. verna* (Mountain Form) Small in Addisonia, xiv. 15, pl. 456 (1929). TYPE from oak-barrens, east of Crossville, Cumberland Co., Tennessee, May 2, 1936, Svenson, no. 7635 (in Herb. Gray.).

In his very detailed account and beautiful plate of *Iris verna* (Mountain Form) and in his subsequent discussion and plate of true *Iris verna* of the Coastal Plain in Addisonia, xvi. 87, pl. 520 (1936), Small clearly brought out the striking differences between the two series: the Coastal Plain plant (true *Iris verna*), with slender and cord-like whitish straight rhizomes and rootless stolons 2–4 mm. thick and lengthening to 2.5–10 cm. between the thickened rooting crowns, the dark scales becoming remote; var. *Smalliana* of the Blue Ridge, Alleghenies and Cumberland region, southward to northwestern Florida and western Alabama, with the stout and dark torulose rhizome 4–8 mm. thick, with very short constrictions between the thick and freely rooting internodes. The mature leaves of the Coastal Plain *I. verna* become 3–8 mm. broad, with 9–19 ribs; in var. *Smalliana* they are 5–13 mm. broad, with 15–29 (possibly more) ribs. In true *I. verna* the spathe-bracts are subscarious and pale to brownish; in var. *Smalliana* they are firmer and often greener. Small brings out slight differences in the perianths. These I am not situated to verify; but the differences in the capsule I can partly subscribe to, having collected the mature fruits of the Coastal Plain *I. verna*. In this plant the capsule is sessile or very short-stalked, 1–2 cm. long; while in var. *Smalliana* it is 2–3.2 cm. long and on a stalk up to 2.5 cm. long.

In his first discussion of the "Mountain Form", Small wrote:



“Compared with the present-day members of this group in the mid-Piedmont, the mountain forms are decidedly denser in habit, with shorter and thicker rootstocks, and larger flowers sometimes quite lacking in odor. As the representative of this group which had occupied the Coastal Plain during the Tertiary showed opposite tendencies in these respects, the sum-total of the differences between them is considerable, and were not exact intermediates well developed in their ancestral Piedmont home, the two might well be classed as separate species. As it is, however, they seem best regarded as only geographical forms, as shown in the nomenclature proposed here.

“The known range of the mountain violet-iris extends from South Carolina to West Virginia, usually at relatively high elevations, although it seems to mingle with the Piedmont form to some extent toward the inner edge of that province.”

Later, in discussing true *Iris verna*, he wrote:

“On comparing the plants of violet iris which at present grow in the Piedmont of North Carolina and adjoining states with those found on the Coastal Plain, it is found that the latter have developed a more lax habit, with slender, long jointed rootstocks, and a smaller, usually more fragrant flower which has narrower-clawed sepals and longer-clawed petals. These features persist throughout its known range, which extends from central Georgia to southeastern Pennsylvania, on the Coastal Plain and rarely just above the Fall Line on the Piedmont.

“*Iris verna* occurs native in sandy or peaty soil which is strongly acid in reaction, and attempts to cultivate it in ordinary non-acid garden soil have always failed, although it appears to be hardy some distance north of its natural range. While sometimes growing in apparently wet places, its roots are usually well up on dryish hammocks, and it seems to thrive best in sandy open woods where the water table is several inches below the surface.”

Others corroborate these observations. Thus, Mr. Francis Welles Hunnewell, having known the loosely stoloniferous plant of the Coastal Plain, tells me that in the Massanutten region he has repeatedly failed to find slender pale stolons on the montane plant; Mr. Carroll Wood, familiar with the latter in the Blue Ridge, makes a similar statement; and Mr. Charles A. Weatherby states that for several years he grew the montane plant, which increased into compact colonies, but that the loosely stoloniferous plant of Coastal Plain sands (in a hotter area than the mountains), although planted in sand, died the first winter. The two are not “forms” in the generally accepted sense but well defined geographic varieties. If the transitions did not occur in the Piedmont they would be as strongly defined as many recognized species in the genus.